Saint Louis COUNTY HEALTH

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number:	Saint Louis County Construction/Operating Permit 7839 and 7840
Project Number:	AP 2014-05-068
Installation Number:	189-0312
Parent Company:	Bridgeton Landfill, LLC
Parent Company Address:	13570 St. Charles Rock Rd., Bridgeton MO 63044
Installation Name:	Bridgeton Landfill, LLC
Installation Address:	13570 St. Charles Rock Rd., Bridgeton MO 63044
Location Information:	St. Louis County

Application for Authority to Construct was made for:

One 3,500 scfm John Zink ZTOF enclosed flare, and one Caterpillar CAT C6.6 ACERT diesel emergency use engine. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

☐ Standard Conditions (on reverse) are applicable to this permit.

☒ Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

EFFECTIVE DATE: JUN 19 2014

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within one year from the effective date of this permit. Permittee should notify the Air Pollution Control Program (APCP) if construction or modification is not started within two years/18 months after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 and Saint Louis County Code of Ordinances Title VI Chapter 612 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Saint Louis County Department of Health Air Pollution Control Program (APCP) of the anticipated date of start-up of this (these) air contaminant source(s). The information must be made available within 30 days of actual startup.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to the Saint Louis County Department of Health APCP and/or Missouri Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Appeal Board, as provided in Saint Louis County Code Section 612.090. Appeals shall be taken within ten (10) days of the time the parties have been notified in writing of the Director's decision and the appeal shall act as a stay of decision except those issued by the Director pursuant to Saint Louis County Code Section 612.100.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Saint Louis County Department of Health APCP at 314-615-8924. If you prefer to write, please address your correspondence to the Saint Louis County Department of Health, Air Pollution Control Program, 6121 North Hanley Rd., Berkeley MO 63134 (or current address).

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Bridgeton Landfill, LLC
St. Louis County, MO

1. Superseding Condition
   The conditions of this permit supersede the following special conditions from previously issued permits.
   A. Special Condition #2 found in the previously issued construction permits, St. Louis County #7787, #7788, 7790 and #7736, project #AP201305026, issued by the St. Louis County Department of Health Air Pollution Control Program August 7, 2013.
   B. Special Condtion #5 found in the previously issued construction permits, St. Louis County #7787, #7788, 7790 and #7736, project #AP201305026, issued by the St. Louis County Department of Health Air Pollution Control Program August 7, 2013.

2. Carbon Monoxide (CO) Emission Limitation
   A. Bridgeton Landfill, LLC shall emit less than 250 tons of CO emissions in any consecutive 12-month period from the entire installation. This total shall include but not be limited to the following sources:
      1. Landfill Gas Flaring Devices
      2. Stationary Internal Combustion Engines
      3. Leachate Treatment System
      4. Combustion of Natural Gas in Landfill Gas Flaring Devices
   B. Attachment A or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Condition 2.A.

3. Control Device Requirement – Open Flares
   A. On a monthly basis, Bridgeton Landfill, LLC shall demonstrate compliance with 40 CFR Part 60 §60.18(c)(3) for open flares.
   B. In order to demonstrate compliance with Special Condition 3.A., Bridgeton Landfill, LLC shall perform monthly sampling of representative landfill gas

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

of each open flare for percent hydrogen, percent methane, and heating value.

C. Attachment B or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Condition 3.A. no later than 10 days following the date of the sampling required by Special Condition 3.B.

D. Upon discovery that compliance with Special Condition 3.A. is not achieved, action(s) shall be initiated to return flare(s) to compliance as soon as practicably possible. Corrective action may include but is not limited to supplementing landfill gas with natural gas or decreasing landfill gas flow rate to a flare.

4. Uncontrolled Hydrogen Chloride Emissions Limitation

A. Bridgeton Landfill, LLC shall emit less than 10 tons of uncontrolled hydrogen chloride (HCl) emissions in any consecutive 12-month period from the total of all landfill gas flaring devices.

B. In order to demonstrate compliance with Special Condition 4.A., Bridgeton Landfill, LLC shall perform monthly sampling of representative landfill gas for total chloride, and perform calculations sufficient to quantify uncontrolled hydrogen chloride (HCl) emissions from the total of all landfill gas flaring devices.

C. Attachment C or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Condition 4.A. no later than 10 days following the date of the sampling required by Special Condition 4.B.

5. Performance Testing

A. Bridgeton Landfill, LLC shall conduct stack testing on the emission unit listed below sufficient to quantify and develop emission factors which shall be used to track emissions of CO and NO_X from the enclosed flare. Stack test shall be performed no earlier than 90 days after startup but no later than 180 days after startup.

1) 3,500 scfm John Zink ZTOF enclosed flare

B. A completed Proposed Test Plan Form (available on MO DNR APCP website) must be submitted to the Saint Louis County Air Pollution Control Program thirty (30) days prior to the proposed test date so that this program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The Proposed Test Plan must be approved by the Saint Louis County APCP prior to

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

conducting the required emissions testing.

C. Two (2) Copies of a written report of the performance test results shall be submitted to the Saint Louis County APCP within 30 days of completion of any required testing and receipt of analysis. The report must include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required EPA Method for at least one (1) sample run.

D. Performance testing shall be conducted under the condition of maximum LFG flow through the enclosed flare, or within 10% of the rated capacity.

6. Recordkeeping and Reporting Requirements

A. Bridgeton Landfill, LLC shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Saint Louis County Department of Health or Missouri Department of Natural Resources' Personnel upon request.

B. Bridgeton Landfill, LLC shall report to the Saint Louis County Department of Health Air Pollution Control Program, 6121 N. Hanley Rd. Berkeley MO 63134 (or current address) no later than ten days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW
Project Number: AP 2014-05-068
Installation ID Number: 189-0312
Permit Number: STL County Construction/Operating Permit #7839 and #7840

Name: Bridgeton Landfill, LLC
Address: 13570 St. Charles Rock Rd.
City: Bridgeton MO 63044

Complete: June 19, 2014

Parent Company: Bridgeton Landfill, LLC
Parent Address: 13570 St. Charles Rock Rd.
City: Bridgeton MO 63044

Saint Louis County, MO

REVIEW SUMMARY

- Bridgeton Landfill, LLC has applied for authority to construct one 3,500 scfm John Zink ZTOF enclosed flare, and one Caterpillar CAT C6.6 ACERT diesel emergency use engine.

- Hazardous air pollutant (HAP) emissions are expected from incomplete combustion of landfill gas in the flare and combustion of diesel fuel in the emergency use engine. Also, HAP emissions are generated by the landfill and controlled to varying efficiencies by the flare.

- New Source Performance Standards (NSPS) 40 CFR Part 60 Subpart WWW, *Standards of Performance for Municipal Solid Waste Landfills* applies to the landfill.

- *Municipal Solid Waste Landfills*, 10 CSR 10-5.490, applies to the landfill.

- National Emission Standards for Hazardous Air Pollutants (NESHAP) apply to this installation. Maximum Achievable Control Technology (MACT) Subpart AAAA, *National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills* applies to this landfill.

- National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63 Subpart ZZZZ, applies to the Caterpillar CAT C6.6 ACERT diesel emergency use engine.

- New Source Performance Standards (NSPS) 40 CFR Part 60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines applies to the Caterpillar CAT C6.6 ACERT diesel emergency use engine.

- The flares are control devices for Non-Methane Organic Compounds (NMOC), HAP, volatile organic compounds (VOC), and methane (CH_4) emissions collected from the

landfill, but are sources of particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), carbon monoxide (CO), sulfur oxides (SO_x), nitrogen oxides (NO_x), carbon dioxide (CO_2), nitrous oxide (N_2O), and other products of combustion. Fugitive emissions not collected by the flare are part of the installation, not the flare itself.

- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are below deminimis levels.

- Bridgeton Landfill, LLC has an existing plant-wide emissions limitation of less than 250 tons CO in any consecutive 12 month period.

- This installation is located in Saint Louis County, a nonattainment area for the 8-hour ozone standard and the 1997 $PM_{2.5}$ NAAQS annual standard and an attainment area for all other criteria pollutants.

- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 100 tons per year for nonattainment pollutants, 250 tons per year for attainment pollutants, and fugitive emissions are not counted toward major source applicability.

- Ambient air quality modeling was not performed since potential emissions of the application are below deminimis levels.

- Performance testing of the flare must be conducted in accordance with 40 CFR Part 60 Subpart WWW.

- A modification to your existing Title V Operating Permit is required for this installation within 1 year of equipment start-up.

- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Bridgeton Landfill is a closed municipal solid waste landfill equipped with a gas collection system and several open landfill gas flaring devices. Bridgeton's existing gas collection and control system (GCCS) contains four permitted flares, including two 4,000 standard cubic feet per minute (scfm) candlestick open flares (permits #7787 and #7788), one 3,500 scfm candlestick open flare (permit #7736), and one 2,500 scfm LFG Specialties flare (permit #7790). Bridgeton Landfill operates a backup emergency generator (diesel engine) used to provide supplemental electricity supply to the GCCS (permit #7784).

Bridgeton Landfill also operates a leachate treatment system which is not yet completed. Some components of the leachate treatment system are currently operating. To date, the total potential emissions from the leachate treatment system project are considered insignificant (10 CSR 10-6.061(3)(A)3) for State Construction Permit applicability determination.

Bridgeton Landfill has a Part 70 Title V Operating Permit OP2010-063. This landfill has been closed since 2005 at a capacity of 17,000,000 yd^3.

Bridgeton Landfill, LLC has an existing plant-wide emissions limitation of less than 250 tons CO in any consecutive 12 month period.

Bridgeton Landfill is an existing Title V Source. The following permits have been issued to Bridgeton Landfill, LLC from the Air Pollution Control Program. Prior to installation of two enclosed flares in 2003 (5454, 5924) there were multiple portable, utility flares and an enclosed flare operated at the site in order to comply with NSPS WWW.

Table 1: Permit History

Saint Louis County Construction Permit #		Description
1496		2500 SCFM ground flare, permit voided 1993
5454		3500 SCFM enclosed flare, installed 2003, removed 2008
5924		3500 SCFM John Zink ZTOF enclosed flare, decommissioned September 24, 2013
7734 (temporary use) Project 2012-07-011 Section 5 Construction Permit Effective July 18, 2012		EP-008T LFG CSU, 2500 SCFM utility open flare, temporary, limited to 100 tons CO total, installed July 2012, decommissioned October 2013
7735 and 7736 Project 2012-08-034 Section 5 Construction Permit Effective Sept. 27, 2012		• EP-008B (7735) 3500 SCFM enclosed flare, Callidus Model G-7A60, installed 2012, start-up date October 3, 2012, decommissioned September 24, 2013 • (7736) Emission Point EP-008U, Installation ID Flare #1, 3500 SCFM utility backup flare, open candlestick, manufactured by John Zink, installed 2012, start-up date January 30, 2013, decommissioned October 2013
Project AP201305026 Saint Louis County Construction/Operating Permit #7787, #7788 and #7790, Modification to Saint Louis County Operating Permit #7736 Section (6) Construction Permit Effective August 7, 2013		• (7787) Emission Point EP-012, Installation ID Flare #2, 4000 scfm John Zink Candlestick Open Flare, Start-up Date September 24, 2013 • (7788) Emission Point EP-013, Installation ID Flare #3, 4000 scfm John Zink Candlestick Open Flare, Start-up Date September 20, 2013 • (7790) Emission Point EP-014, Installation ID Flare LFG CSU, 2500 scfm LFG Specialties Candlestick Open Flare, Start-up Date October 1, 2013 • (7736) Emission Point EP-011, Installation ID Flare #1, 3500 SCFM utility backup flare, open candlestick, manufactured by John Zink, installed 2012, start-up date October 1, 2013
7784 Effective April 11, 2013		1000 kW Emergency Generator, #2 Fuel Oil, Caterpillar Model No. SR5, Engine Model C32 TA, 4 Stroke, 32.10 Displacement, 12 Cylinder
Leachate Treatment System Project Permits	7803 Effective Nov. 7, 2013	Emission Point EP-09, uncontrolled 316,000 gal Leachate Treatment Tank, w/ optional emissions control, odor control is required, start-up date 08/20/2013
	7804 Effective March 17, 2014	two (2) 1 mm gallon leachate treatment tanks (Tanks 1 and 2) with thermal oxidizer control and backup thermal oxidizer
	7837 and 7838 Effective 6/10/14	• Two (2) 1 mm gallon leachate treatment tanks (Tanks 3 and 4) with thermal oxidizer control and backup thermal oxidizer • 543 kW Emergency Generator, Perkins Diesel Engine Model 2506C-E15TAG3

PROJECT DESCRIPTION

On May 1, 2014 Bridgeton Landfill, LLC submitted two air construction permit applications to the St. Louis County Department of Health Air Pollution Control Program.

1. Air Construction Permit application to add a 3,500 scfm John Zink ZTOF enclosed flare in the existing flare compound at the landfill. The flare is 40 feet tall and has a diameter of 11 feet. This flare was previously permitted at Bridgeton Landfill (St. Louis County Air Construction Permit #5924), and it was decommissioned on September 24, 2013. Bridgeton Landfill, LLC proposes to install the flare "to provide operational flexibility to manage on-site conditions."
2. Air Construction Permit application to add an emergency use generator powered by a Caterpillar CAT C6.6 ACERT diesel engine; 185.7 kw (249 hp), maximum fuel consumption 13.9 gallons/hr, 6.6 liter, 6 cylinder, 4-stroke.

Upon completion of this project, the landfill gas flow capacity of the flares at Bridgeton Landfill will total 17,500 scfm.

All landfill gas flaring devices at this installation are required to comply with the applicable provisions of 40 CFR Part 60 Subpart WWW.

EMISSIONS/CONTROLS EVALUATION

The emissions in *Existing Potential Emissions* column in Table 2 are a result of summing the following emissions data:

a. *Annual Potential to Emit* column from Table 3 contained in Construction Permit AP201305026 issued August 7, 2013
b. *Leachate Treatment System Project Potential Emissions* column from Table 4 contained in St. Louis County Construction Permit #7837 and #7838 issued on 6/10/14.
c. Diesel engine emissions from Appendix C of Emergency Diesel Generator Construction/Operating Permit Application dated April 3, 2013.

The *existing actual emissions* column in Table 2 represents the actual emissions from the existing facility from the installations previous years (2013) emission inventory questionnaire submittal.

The *potential emissions of the application* column in Table 2 represents the potential emissions of the proposed project (one 3,500 scfm John Zink ZTOF enclosed flare, and one 185.7 kw Caterpillar CAT C6.6 ACERT diesel emergency use engine). Potential emissions of the enclosed flare were calculated using AP-42 Section 2.4 *Municipal Solid Waste Landfills* (11/98) for VOC, SO_x, and HAP's, AP-42 Section 13.5 *Industrial Flares* (09/91) for PM, PM_{10}, and $PM_{2.5}$, and manufacturer data for CO and NO_x. Potential emissions of the diesel emergency use engine were calculated using USEPA Tier 4 emissions standards contained in 40 CFR Chapter I, Subchapter U, §1039.102 Table 5, for NO_x, CO, PM, $PM_{2.5}$, PM_{10}, and VOC, and AP42 Section 3.3 Table 3.3-1 for SO_2. Potential emissions of the diesel emergency use engine are based on 500 hours per year of operation.

When manufacturer supplied emissions data is used to determine potential NO_x and CO

emissions for the enclosed flare, the site specific landfill gas composition and generation rate is used. A landfill gas heating value of 277.83 btu/scf is used. The value is based on the site specific concentration of methane and hydrogen in the landfill gas. Site specific conditions at Bridgeton Landfill have resulted in methane concentrations significantly lower than typically observed at municipal solid waste landfills. The approximate methane content of the landfill gas is currently 10%. The low site specific methane content is a result of natural degradation of the landfill which occurs with age. Low site specific methane content may also be attributed to a subsurface reaction which has been occurring within the waste mass since about 2010. To address the low site specific methane content and future variations in landfill gas composition, a methane content of 28% was used to calculate the net heating value of the landfill gas.

The *potential emissions of the installation* column in Table 2 represents the new potential emissions of the installation, after completion of the proposed project. See Table 3 for potential to emit of all pollutants when carbon monoxide is limited to 250 tons per year. Potential emissions of the installation were calculated by summing the existing potential emissions and the potential emissions of the application.

The *new installation conditioned potential* column in Table 2 represents conditioned emissions of the facility after construction of the proposed project.

A conditioned potential of 10 tons per year of uncontrolled HCl emissions is established in this permit in order to limit total uncontrolled HCl emissions from landfill gas flaring devices to deminimis levels. HCl emissions are generated from combustion of chlorinated compounds in the flare. It is assumed that all the chlorine contained in the landfill gas sent to the flare will be converted to HCl. The individual HAP listed in the *existing potential emissions* column in Table 2 below (9.51 tons uncontrolled HCl) is directly related to landfill gas flow rate (using AP-42 Section 2.4 *Municipal Solid Waste Landfills* (11/98) equation 4). The landfill gas flow rate used to calculate 9.51 tons uncontrolled HCl is 4863.9 mmscf/yr. This flow rate is based upon a CO limit of 250 tons per year, a landfill gas heating value of 277.83 btu/scf, and an emission factor of 0.37 lb CO/mmbtu from AP-42 Table 13.5-1. When btu value of landfill gas decreases below 277.83 btu/scf, the allowable landfill gas flow rate increases while CO remains below 250 tons/year. A decrease in btu value of landfill gas causes an allowable increase in landfill gas flow rate. An increase in landfill gas flow rate results in potential for uncontrolled HCl emissions to exceed 10 tons per year.

When uncontrolled HCl emissions are limited to 10 tons per year, total controlled HAP emissions will always be less than 25 tons per year.

Emissions of SO_x, VOC, and HAPs for the enclosed flare were calculated in accordance with Equations 4 and 7 of AP-42 Section 2.4 *Municipal Solid Waste Landfills* (11/98). Sulfur, VOC as a NMOC, and HAP concentrations are provided in parts per million volume, which is converted to volumetric flow rate. Using the ideal gas law, the volumetric flow rate is converted to a mass flow rate. An explanation of the calculations and values used is contained in the permit application Appendix C (dated April 24, 2014) and AP-42 Section 2.4 *Municipal Solid Waste Landfills* (11/98). HAP's and corresponding default concentrations in the landfill gas are taken from the current HAPs which are listed in AP-42 Table 2.4-1 (11/98).

There is an allowance for the use of natural gas to supplement landfill gas in the flares contained in Special Condition 3.D. Supplementing with natural gas may be necessary to increase BTU value of the landfill gas which will ensure compliance with 40 CFR Part 60 Subpart WWW and 40 CFR Part 60 §60.18. Compliance with Special Condition 3 ensures that adequate landfill gas BTU value and proper destruction efficiency of the landfill gas is maintained. AP-42 Section 13.5 states that waste gases to be flared must have a fuel value of 200 to 250 BTU per cubic foot for complete combustion; otherwise fuel must be added. 40 CFR Part 60 §60.18(c)(3)ii states that open flares shall be used only with the net heating value of the gas being combusted being 200 btu/scf or greater if the flare is non-assisted. Flares providing supplemental fuel to waste gas are known as fired, or endothermic, flares. Supplementing landfill gas with natural gas does not cause a change in emission factors. The same emission factors are used for combusting both landfill gas and natural gas in open flaring devices (see AP 42 Section 13.5). CO and NO_X in open flares is based on BTU value of the gas being combusted. An increase in btu value of landfill gas caused by addition of natural gas will be reflected in the monthly CO plant-wide total.

The landfill and flares are sources of GHG, including CO_2, CH_4, and N_2O. The emission factors for N_2O, CH_4, and CO_2 were obtained from the *Greenhouse Gas Reporting Rule*, 40 CFR 98 Subpart C, Table C-1 and C-2. The GHG global warming potentials from Table A-1 to 40 CFR Part 98 Subpart A were used to calculate carbon dioxide equivalent (CO_2e).

This installation is not one of the named source groups found in 10 CSR 10-6.020(3)(B), Table 2, therefore, the installations major source level is 250.0 tons per year of PM_{10}, CO, and SO_2, and 100.0 tons per year for NO_x and VOC. Fugitive emissions are not counted toward major source and Operating Permit applicability for non-named sources. The non-fugitive emissions are the landfill gas constituents that were captured but not destroyed by the flares and the secondary emissions from the flares. Fugitive emissions are not included in Table 2.

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory *De Minimis* Levels	Existing Potential Emissions	Existing Actual Emissions (2013 EIQ) [1]	Potential Emissions of the Application	Potential Emissions of the Installation	New Installation Conditioned Potential
$PM_{2.5}$	10.0	11.36	30.53	4.22	15.58	N/A
PM_{10}	15.0	11.36	30.53	4.22	15.58	N/A
SOx	40.0	37.75	50.24	14.22	51.97	N/A
NOx	40.0	53.37	59.17	20.47	73.84	N/A
VOC	40.0	6.67	11.37	0.95	7.62	N/A
CO	100.0	<250	74.08	38.69	<250	<250.00
I HAP (HCl)	10.0	9.51 [2]	N/D	3.60	<10	<10 [3]
Total HAPs	25.0	11.30	2.60	3.15	14.45	N/A
CO_2	N/A	N/D	N/A	29,335	N/D	N/A
Methane	N/A	N/D	N/A	1.80	N/D	N/A
N_2O	N/A	N/D	N/A	0.35	N/D	N/A
GHG Mass Basis	100/250	N/D	N/A	29,338	N/D	N/A
CO_2e	75,000/100,000	N/D	N/A	29,486	N/D	N/A

N/A = Not Applicable; N/D = Not Determined
Note:

1. Emission factors used for EIQ reporting are not consistent with emission factors and calculations used for Existing Potential Emissions, Potential Emissions of the Application, and Potential Emissions of the Installation.
2. This resulting potential emissions of individual HAP (HCl) is based on a CO limit of 250 tons/year. Total landfill gas flow rate resulting from 250 tons per year of CO is 4863.9 mmscf/year, based on methane content of 28% and a resulting net heating value of 277.83 btu/scf, and CO emission factor for CO of 0.37 lb/mmbtu from AP-42 Table 13.5-1. Individual HAP (uncontrolled HCl) potential emissions were calculated using AP-42 Section 2.4 *Municipal Solid Waste Landfills* (11/98) eq. 4, with a default Cl concentration of 42 ppmv recommended in AP-42 Section 2.4 (11/98) pg. 9.
3. A conditioned potential of 10 tons per year of individual HAP is established in this permit action in order to limit uncontrolled HCl emissions from landfill gas flaring devices to deminimis levels. The individual HAP listed in the *existing potential emissions* column in Table 2 (9.51 tons HCl) is directly related to landfill gas flow rate (using AP-42 Section 2.4 *Municipal Solid Waste Landfills* (11/98) equation 4). The landfill gas flow rate used to calculate 9.51 tons HCl is 4863.9 mmscf/yr. This flow rate is based upon a CO limit of 250 tons per year, a landfill gas heating value of 277.83 btu/scf, and an emission factor of 0.37 lb CO/mmbtu from AP-42 Table 13.5-1. When btu value of landfill gas decreases below 277.83 btu/scf, the landfill gas flow rate is allowed to increase while CO remains below 250 tons/year. A decrease in btu value of landfill gas causes an allowable increase in landfill gas flow rate and results in a potential for uncontrolled HCl emissions to exceed 10 tons per year.

Table 3 shows the resulting potential emissions of the installation for all pollutants when CO is limited to 250 tons/year. Total landfill gas flow rate resulting from 250 tons per year of CO is 4863.9 mmscf/year, based on methane content of 28% and a resulting net heating value of 277.83 btu/scf. Potential emissions in Table 3 were calculated using AP-42 Section 2.4 *Municipal Solid Waste Landfills* (11/98) for VOC, SO_x, and HAP's, and AP-42 Section 13.5 *Industrial Flares* (09/91) for NO_x, CO, PM, PM_{10}, and $PM_{2.5}$.

Table 3

Pollutant	Regulatory *De Minimis* Levels	Plant Wide Annual Potential to Emit Based on CO Limit of 250 Tons
$PM_{2.5}$	10.0	11.20
PM_{10}	15.0	11.20
SOx	40.0	37.37
NOx	40.0	50.46
VOC	40.0	12.00
CO	100.0	<250.00
I HAP (HCl)	10.0	9.51
Total HAPs	25.0	11.48

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are below deminimis levels.

APPLICABLE REQUIREMENTS

Bridgeton Landfill, LLC shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, consult your operating permit.

SAINT LOUIS COUNTY CODE OF ORDINANCES

- *612.110, Permits Required*
  The facility is required to obtain, in writing, a permit prior to installation of any equipment that may cause the issuance of air contaminants.

- *612.120, Permits to be Visibly Affixed or Placed*
  Permits shall be visibly affixed and accessible.

- *612.260, Permit* Fees-Schedules
  Pay applicable annual fees.

- *612.290 Right of Entry; Inspections; Samples.*
  The Director or his/her agents may inspect at any reasonable time and in a reasonable manner any condition or equipment which is believed to be an air contaminant source, any control apparatus, or any record relating to a use of equipment or control apparatus which affects the emission of air contaminants.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information,* 10 CSR 10-6.110

- *Operating Permits*, 10 CSR 10-6.065

- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170

- *Restriction of Emission of Odors*, 10 CSR 10-6.165

- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220

SPECIFIC REQUIREMENTS

- *Municipal Solid Waste Landfills*, 10 CSR 10-5.490

- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Municipal Solid Waste Landfills*, 40 CFR Part 60, Subpart WWW

- *National Emission Standards for Hazardous Air Pollutants (NESHAPs)*, 10 CSR 10-6.075, *National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills,* 40 CFR Part 63, Subpart AAAA

- National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63 Subpart ZZZZ

- New Source Performance Standards (NSPS) 40 CFR Part 60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

SAINT LOUIS COUNTY APCP CONSTRUCTION PERMIT #7839
3,500 SCFM ENCLOSED FLARE
MFG: JOHN ZINK ZTOF
EP-08G

SAINT LOUIS COUNTY APCP CONSTRUCTION PERMIT #7840
185.7 KW (249 HP) EMERGENCY GENERATOR, #2 FO
CATERPILLAR CAT C6.6 ACERT ENGINE
13.9 GALLONS/HR, 6.6 LITER, 6 CYLINDER, 249 HP

Rogus, Jeremy
Air Emission Specialist
The Saint Louis County Department of Health
Air Pollution Control Program

06/19/2014
Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form for 3,500 scfm John Zink ZTOF enclosed flare and supplied attachments, dated May 1, 2014, received by the Saint Louis County Department of Health Air Pollution Control Program on May 5, 2014, designating Bridgeton Landfill, LLC as the owner and operator of the installation.

- The Application for Authority to Construct form for CAT C6.6 ACERT Emergency Diesel Generator and supplied attachments, dated May 1, 2014, received by the Saint Louis County Department of Health Air Pollution Control Program on May 5, 2014, designating Bridgeton Landfill, LLC as the owner and operator of the installation.

- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

Attachment A: Monthly CO Tracking Record for LFG Flaring Devices
Bridgeton Landfill
(Copy this sheet as needed.)

Site ID: 189-0312
Project Number: AP 2014-05-068

Date (MM/YY)	Emission Point(s)	Monthly Landfill Gas Flow (SCF)	[1]Monthly LFG Net Heating Value (btu/SCF)	Column C × D ÷ 1,000,000 = mmbtu/month	[2]CO Emission Factor (lb/mmBtu)	Monthly CO Emissions (tons)	[3]Cumulative [Rolling 12-month] CO Emissions (tons/12 month)
Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H
	EXAMPLE	151200000	277.83	42007.896	0.37	7.77	

Note 1: The monthly LFG heating value can be amended with approval from the St. Louis County Air Pollution Control Program. The 277.83 btu/SCF value is described in the permit application received May 5, 2014.
Note 2: The CO emission factor is from AP-42 Table 13.5-1
Note 3: The Cumulative CO Emissions (tons-Column H) is calculated by adding the monthly CO emissions for each source (Column G), and adding to previous cumulative CO emissions, Column H.

ATTACHMENT B: DEMONSTRATION OF COMPLIANCE WITH 40 CFR Part 60 §60.18(c)(3)
Bridgeton Landfill, Site ID 189-0312 Project Number: AP 2014-05-068
(Copy this sheet as needed.)

Date Sample Taken	Flare (unique description; SLCDOH permit #, model #, etc.)	Flow Diameter (sq. ft.)	Hydrogen Content (%)	Methane Content (%)	Net Heating Value (Btu/scf)	Actual Exit Velocity (SCFM) [1]	Maximum Permitted Velocity (SCFM) [2]	Compliance with §60.18 (yes/no) [3]
Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H	Column I
mm/dd/yy	4000 SCFM John Zink (#7787)	0.936	10%	15%	180	2800	2873.6	Yes

[1] = Actual Exit Velocity shall be determined in accordance with §60.18(f)(4), converted to SCFM
[2] = Maximum Permitted Velocity (Vmax) shall be determined using calculation provided in §60.18(c)(3)(i)(A), converted to SCFM
[3] = Maintain records of corrective action taken and report exceedances

Attachment C: Monthly Uncontrolled Hydrogen Chloride Emissions Tracking Record
Bridgeton Landfill – Plant Wide Limitation
(Copy this sheet as needed.)

Site ID: 189-0312
Project Number: AP 2014-05-068

Date (MM/YY)	Monthly Landfill Gas Flow (ft^3)	Concentration of Total Chloride (ppmv)	Emission Rate of Total Chloride (m^3/month) = LFG flow rate (ft^3/month) x Concentration of Total Chloride (ppmv) $\div 10^6$ x ($0.02832 m^3/ft^3$)	Mass Emissions of Total Chloride (kg/month) determined using AP-42 section 2.4 eq. 4	Mass Emissions of HCl (kg/month) (uncontrolled) Column E x 1.03[1]	Cumulative [Rolling 12-month] Uncontrolled HCl Emissions (tons/12 month)
Column A	Column B	Column C	Column D	Column E	Column F	Column G

Note 1 – Ratio of the molecular weight of HCl to the molecular weight of Cl